

CLAIMS

1. A delivery device comprising:
a catheter having a first end and a second end; and
an expandable, digestible member connected to the first end of the catheter.
2. The invention of claim 1 wherein the expandable, digestible member contacts only an external edge surface of the first end of the catheter.
3. The invention of claim 1 wherein the expandable, digestible member contacts only an external side surface of the first end of the catheter.
4. The invention of claim 1 wherein the expandable, digestible member contacts an external edge surface and an external side surface of the first end of the catheter.
5. The invention of claim 1 wherein the expandable, digestible member contacts an internal side surface of the first end of the catheter.
6. The invention of claim 1 the expandable, digestible member is substantially dehydrated when in a collapsed state, and wherein the expandable, digestible member swells upon contact with gastric juices.
7. The invention of claim 1 wherein the expandable, digestible member is substantially fibrous.
8. The invention of claim 1 wherein the expandable, digestible member comprises collagen.
9. The invention of claim 1 wherein the expandable, digestible member comprises meat.

10. The invention of claim 1 wherein an external diameter of the expandable, digestible member in a collapsed state does not exceed an external diameter of the catheter by more than about twenty percent.

11. The invention of claim 1 wherein an external diameter of the expandable, digestible member in a collapsed state does not exceed an external diameter of the catheter by more than about ten percent.

12. The invention of claim 1 wherein an external diameter of the expandable, digestible member in a swelled state does not exceed an external diameter of the catheter by more than fifty percent.

13. The invention of claim 1 wherein an external diameter of the expandable, digestible member in a swelled state does not exceed an external diameter of the catheter by more than thirty percent.

14. The invention of claim 1 wherein the catheter is substantially flexible.

15. The invention of claim 1 wherein the catheter is substantially rigid.

16. The invention of claim 1 wherein the catheter comprises a material selected from the group consisting of polymers, metals, and a combination thereof.

17. The invention of claim 1 wherein the catheter comprises a biocompatible thermoplastic polymer.

18. The invention of claim 1 wherein the catheter comprises a polymer selected from the group consisting polytetrafluoroethylene, polyurethane, silicone, and combinations thereof.

19. The invention of claim 1 further comprising at least one secondary expandable, digestible member connected to an external surface of the catheter intermediate between the first end and the second end.

20. The invention of claim 1 wherein the expandable, digestible member is connected to the first end by a biocompatible adhesive.

21. The invention of claim 1 wherein a side surface of the first end defines a plurality of perforations, and wherein the expandable, digestible member is connected to the first end through at least one of the perforations.

22. The invention of claim 1 wherein a side surface of the first end comprises means for securing the expandable, digestible member.

23. The invention of claim 1 further comprising an erodable coating surrounding at least a portion of the expandable, digestible member, whereby the erodable coating degenerates upon contacting contents of a stomach.

24. The invention of claim 23 wherein the erodable coating comprises a topical analgesic whereby irritation caused by insertion of a portion of the delivery device into a patient is alleviated.

25. The invention of claim 1 further comprising a connector through which the catheter may be loaded, wherein the connector is connected to the second end of the catheter and wherein the connector comprises at least one port.

26. The invention of claim 25 wherein the connector comprises a plurality of ports.

27. The invention of claim 26 wherein the connector is selected from the group consisting of a Y-shaped connector comprising two ports and a W-shaped connector comprising three ports.

28. The invention of claim 26 wherein at least one of the ports comprises a female adapter.

29. The invention of claim 1 further comprising a flexible linker, wherein the first end of the catheter is connected to remaining portions of the catheter through intermediacy of the flexible linker.

30. A delivery device comprising:
a substantially flexible catheter having a first end and a second end, wherein the catheter comprises a biocompatible polymer; and
an expandable, digestible member connected to the first end of the catheter, which is substantially dehydrated in a collapsed state, and which swells upon contact with gastric juices.

31. The invention of claim 30 further comprising an erodable coating surrounding the expandable, digestible member, whereby the erodable coating degenerates upon contacting contents of a stomach.

32. A method of delivering a liquid to a patient comprising:
intubating the patient with a delivery device comprising a catheter having a first end and a second end; and an expandable, digestible member connected to the first end of the catheter; and
delivering the liquid through the catheter into the patient.

33. The invention of claim 32 wherein the intubating is through a nasal opening of the patient.

34. The invention of claim 32 wherein the intubating is through an abdominal opening of the patient.

35. The invention of claim 32 wherein the liquid comprises a nutrient.

36. The invention of claim 32 wherein the intubating is continued until the first end of the catheter reaches an interior of a stomach of the patient.

37. The invention of claim 36 further comprising contacting the expandable, digestible member with gastric juices in the stomach, such that the expandable, digestible member is converted from a collapsed state to a swelled state.

38. The invention of claim 37 further comprising moving at least a portion of the first end of the catheter through the pylorus of the patient by peristaltic action of the stomach on the expandable, digestible member in the swelled state.

39. The invention of claim 38 further comprising digesting at least a portion of the expandable, digestible member.

40. The invention of claim 39 wherein movement of the catheter through the pylorus is proportional to an amount of the expandable, digestible member remaining undigested.

41. The invention of claim 32 wherein the delivery device further comprises an erodable coating surrounding the expandable, digestible member, whereby the erodable coating degenerates upon contacting contents of a stomach of the patient.

42. A method of delivering nutrition to a patient comprising:
intubating the patient through a nasal opening with a delivery device comprising:
a substantially flexible catheter having a first end and a second end, wherein the catheter comprises a biocompatible polymer; and
an expandable, digestible member connected to the first end of the catheter, which is substantially dehydrated in a collapsed state, and which swells upon contact with gastric juices, wherein intubating continues until the first end of the catheter reaches an interior of a stomach of the patient;
contacting the expandable, digestible member with gastric juices in the stomach, such that the expandable, digestible member is converted from the collapsed state to a swelled state;
moving at least a portion of the first end of the catheter through the pylorus of the patient by peristaltic action of the stomach upon the expandable, digestible member; and

delivering the nutrition through the catheter into a small intestine region of the patient.

43. The invention of claim 42 further comprising digesting at least a portion of the expandable, digestible member, such that movement of the catheter through the pylorus is proportional to how much of the expandable, digestible member remains undigested.

44. The invention of claim 42 wherein the delivery device further comprises an erodable coating surrounding the expandable, digestible member, whereby the erodable coating degenerates upon contacting contents of the stomach, and whereby swelling of the expandable, digestible member is substantially prevented until the erodable coating begins to degenerate.

45. The invention of claim 42 wherein the delivery device further comprises a stylet removably inserted in an interior region of the catheter, and wherein the method further comprises:

guiding the first end of the catheter into the interior of the stomach by use of the stylet; and
removing the stylet.